

Rulison Monitoring Results

Noble Energy Well BM 35-21D

Well: Gas production well, Battlement Mesa 35-21D, API # 05–045–12505. (Pad 26 is near the Rulison, CO, Site.)

Operator: Noble Energy, Incorporated

Sampler: U.S. Department of Energy, Office of Legacy Management, Grand Junction, CO.

Date of Sampling Event: 28 May 2008

Samples of natural gas and produced water were collected from production well BM 35-21D. Location data for the surface collection point and the sample location are given in Table 1. A description of the samples collected is found in Table 2.

Table 1. Well BM 35-21D, API # 05–045–12505

Sample Point Location	Location	Sample Location						
		Sea Level elevation (feet)	Distance (feet) from		Surface		Distance from GZ (miles)	Heading from GZ (deg)
			N-S Section line	E-W Section line	Latitude (NAD 27)	Longitude (NAD 27)		
Surface	NENW S35 T7S R95W	9236.0	798.63 FNL	2,117.81 FWL	39.398841	-107.965945	1.069	W23.4°S
Subsurface	NENW S35 T7S R95W	164.9	1,213.71 FNL	1,923.51 FWL	39.397704	-107.966626	1.137	W26.2°S

Location data updated 28 May 2008.

NA: not available

The subsurface elevation is at the midpoint of the perforation interval.

Link to Colorado Oil and Gas Conservation Commission information about well BM 35-21D
<http://oil-gas.state.co.us/cogis/FacilityDetail.asp?facid=04512505&type=WELL>

Table 2. Sample Description

Sample Ticket No.	Location			Field Sample Matrix	Analytes	Samp Vol. (L)	Comments
	Name	Type	Sub-type				
NFD-369	BM 35-21D	WL	Angl	Gas	3H, 14C	18.8	P _a ~20 psi
NFD-369	BM 35-21D	WL	Angl	Water	3H, Cl ⁻	0.4	Available sample volume decanted from condensate.

3H: tritium 14C: carbon 14 P_a : pressure Cl⁻: chloride

The water sample was submitted to Paragon Analytics in Fort Collins, Colorado for the determination of gross alpha, gross beta, gamma emitting nuclides, and tritium. The results are listed in Table 3.

The natural gas sample was submitted to Isotech Laboratories in Champaign, Illinois, for natural gas analysis and the determination of tritium and carbon-14. The gas analysis results are listed in Table 4.

Table 3. Water Sample NFD-368 Results, Paragon Analytics

RESULTS REPORT

RIN: 08051601

Site: Rulison Site

Location: BM 35-21D

Ticket Number: NFD 368

Report Date: 7/24/2008

Parameter	Units	Sample Date	ID	Result	Lab	Qualifiers Data	QA	Standard ¹
H-3	pCi/L	5/28/2008	N001	27.3	U		#	20,000
CHLORIDE	mg/L	5/28/2008	N001	14000			#	

¹USEPA Primary Radionuclide Drinking Water Standard.

Table 4. Natural Gas Sample NFD-368 Results, Isotech Laboratories

RESULTS REPORT

RIN: 08051602

Site: Rulison Site

Location: BM 35-21D

Ticket Number: NFD 368

Report Date: 7/24/2008

Parameter	Units	Sample Date	Sample ID	Result	Lab	Qualifiers Data	QA	Standard ²
Helium	percent	5/28/2008	N001	0.0022				
Hydrogen	percent	5/28/2008	N001	0.0020				
Argon	percent	5/28/2008	N001	nd	U			
Oxygen	percent	5/28/2008	N001	0.0271				
Nitrogen	percent	5/28/2008	N001	0.14				
Carbon Dioxide	percent	5/28/2008	N001	5.18				
Methane	percent	5/28/2008	N001	89.69				
Ethane	percent	5/28/2008	N001	3.70				
Propane	percent	5/28/2008	N001	0.695				
Isobutane	percent	5/28/2008	N001	0.159				
Butane	percent	5/28/2008	N001	0.128				
Isopentane	percent	5/28/2008	N001	0.0702				
Pentane	percent	5/28/2008	N001	0.0550				
Hexanes	percent	5/28/2008	N001	0.153				
Carbon-14	Percent modern carbon	5/28/2008	N001	0.3	U			
Tritium	pCi/L methane	5/28/2008	N001	0.0514	U			

¹ Not detected.

² There are no applicable standards for natural gas.

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

U Analytical result below detection limit.

DATA QUALIFIERS:

F Low flow sampling method used.

J Estimated value.

L Less than 3 bore volumes purged prior to sampling.

R Unusable result.

U Parameter analyzed for but was not detected.

G Possible grout contamination, pH > 9.

Q Qualitative result due to sampling technique.

X Location is undefined.

QA QUALIFIER:

Validated at Level 1 according to quality assurance guidelines.